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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/735,368

12/12/2003

Charles Stanley Aldrich

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EXAMINER

FIDLER, SHELBY LEE

ART UNIT

PAPER NUMBER

2861

DATE MAILED: 08/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/735,368	Applicant(s) ALDRICH ET AL.	
	Examiner Shelby Fidler	Art Unit 2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 4-6, 10-13, 15 and 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/12/2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 4-6, 10-13, 15, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kosaka et al. (US 6283577 B1) in view of Niimura (US 2003/0214659 A1).

Regarding claim 1:

Kosaka et al. teach of a method of performing printhead maintenance firing in an ink jet printer that has a printhead carrier (*carriage 4, Fig. 2*) that carries an ink jet printhead (*recording head 6, Fig. 2*), the ink jet printer having a waste ink receptacle (*case 7, Fig. 2*), comprising the steps of:

decelerating the printhead carrier from a first velocity (*col. 5, lines 23-26*) after printing print data (*col. 5, lines 20-22*); and

controlling a firing of the printhead during the decelerating (*col. 6, lines 20-24*) in accordance with maintenance data (*inherent to the flushing process*) so that ink droplets ejected from the printhead during the decelerating (*col. 6, lines 20-24*) are received by the waste ink receptacle (*col. 3, lines 52-56*); and

maintenance data ejection occurs after print data ejection (*col. 6, lines 20-24*)

Kosaka et al. do not expressly teach that the maintenance data being added to the print data for a particular printing swath pass for serialization to the printhead; and

wherein a timing segment is interposed between the print data and the maintenance data

However, Niimura teaches that the maintenance data (*preliminary discharge image data*) being added to the print data (*print image data*) for a particular printing swath pass for serialization to the printhead (*S412 of Fig. 4 and paragraph 47, lines 1-12*); and wherein a timing segment (*NULL data*) is interposed between the print data and the maintenance data (*paragraph 47, lines 7-12*)

At the time of invention, it would have been obvious to a person of ordinary skill in the art to add maintenance data to print data for a particular printing swath pass into the invention of Kosaka et al. The motivation for doing so, as taught by Niimura, is to execute an efficient processing for nozzle recovery (*paragraph 5*).

Regarding claims 4 and 12:

Kosaka et al. as modified by Niimura teach of calculating the data length of the timing segment based on a length of the print data (*paragraph 47, lines 3-12; since print image data, preliminary discharge image data, and NULL data are combined to form one raster of image data, the NULL data must be based on the length of the print image data*)

Regarding claims 5 and 13:

Kosaka et al. as modified by Niimura teach that the timing segment is composed of zeros data (*NULL data, paragraph 47, lines 7-12 of Niimura*)

Regarding claims 6 and 15:

Kosaka et al. as modified by Niimura teach that the waste ink receptacle is positioned at a fixed location (*col. 3, lines 52-56 of Kosaka*)

Regarding claims 10 and 18:

Kosaka et al. as modified by Niimura teach that the waste ink receptacle is positioned at a predetermined location outside a print zone (*printing zone*) of the ink jet printer (*preliminary*

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discharge positions PJ1 and PJ2, Fig. 3 and paragraph 38 of Niimura), and positioned in relation to an edge of a sheet of print media (*Figs. 2 and 3 of Niimura*)

Regarding claim 11:

Kosaka et al. teach a method of performing printhead maintenance firing in an ink jet printer that has a printhead carrier (*carriage 4, Fig. 2*) that carries an ink jet printhead (*recording head 6, Fig. 2*), the ink jet printer having a waste ink receptacle (*case 7, Fig. 2*), comprising the steps of:

receiving print data in a form of print data segments (*obvious to the transfer of data in col. 4, lines 30-33*);

generating a maintenance segment (*obvious to the flushing operation of col. 5, lines 35-38*);

accelerating the printhead carrier to a first velocity (*col. 5, lines 18-20*);

serializing the print data segments to the printhead (*col. 5, lines 35-38*);

decelerating the printhead carrier during the maintenance segment (*col. 5, lines 20-25*);

and

controlling a firing of the printhead in accordance with data in the maintenance segment (*col. 5, lines 35-38*) so that ink droplets ejected from the printhead during the decelerating (*col. 6, lines 20-24*) are received by the waste ink receptacle (*col. 3, lines 52-56*); wherein

maintenance data ejection occurs after print data ejection (*col. 6, lines 20-24*);

Kosaka et al. do not expressly teach generating a timing segment;

adding the timing segment and maintenance segment to the print data segments; and

serializing the timing segment and maintenance segment to the printhead

However, Niimura teaches generating a timing segment (*dummy data; paragraph 47, lines 3-7*);

adding the timing segment and maintenance segment to the print data segments
(*paragraph 47, lines 3-12*); and
serializing the timing segment and maintenance segment to the printhead (*paragraph 7*).

Response to Arguments

Applicant's arguments with respect to claims 1-18 have been considered but are moot in view of the new ground(s) of rejection. Please see above rejection of Kosaka et al. (US 6283577 B1) in view of Niimura (US 2003/0214659 A1), which teaches maintenance data that is appended to print data for a particular printing swath.

Allowable Subject Matter

Claims 7-9, 14, and 16-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 7-9 indicate allowable subject matter since the prior art of record does not teach a method of performing printhead maintenance firing including the step of determining a length of the waste ink receptacle, which is positioned to begin at a predetermined location, is determined by the formula: $L = [(D_{gap}/V_d) \times V_c] + (N/D_{pi})$, wherein D_{gap} is a gap distance from the printhead to a surface of the waste ink receptacle; V_d is a droplet velocity of ink droplets ejected from the printhead; V_c is a carrier velocity of the printhead carrier; N is the number of spit fires per nozzle; and D_{pi} is the resolution in combination with other features and limitations of claim 7.

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Claims 14 indicates allowable subject matter since the prior art of record does not teach a method of performing printhead maintenance firing including the step of serilizing the print data segments and the timing segment when the printhead carrier is moving at the first velocity in combination with other features and limitations of claim 14.

Claims 16-17 indicate allowable subject matter since the prior art of record does not teach a method of performing printhead maintenance firing including the step of determining a length of the waste ink receptacle, which is positioned to begin at a predetermined location, is determined by the formula: $L = [(D_{gap}/V_d) \times V_c] + (N/D_{pi})$, wherein D_{gap} is a gap distance from the printhead to a surface of the waste ink receptacle; V_d is a droplet velocity of ink droplets ejected from the printhead; V_c is a carrier velocity of the printhead carrier; N is the number of spit fires per nozzle; and D_{pi} is the resolution in combination with other features and limitations of claim 16.

Communication with the USPTO

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shelby Fidler whose telephone number is (571) 272-8455. The examiner can normally be reached on MWF 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vip Patel can be reached on (571) 272-2458. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SF 8/9/06

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